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EXAMINER	
FLYNN, KIMBERLY D	

ART UNIT	PAPER NUMBER
2153	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/518,753	ARNOLD ET AL.
	Examiner	Art Unit
	Kimberly D Flynn	2153

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 9-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 9-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

Detailed Action

This action is in response to a response and Amendment filed September 29, 2003. Claims 7 and 8 are cancelled and claims 1-6 and 9-34 are presented for further consideration.

Claim Rejections – 35 U.S.C. 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 6-21, 25-29, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens (TCP/IP Illustrated Volume 1: The Protocols – Chapter 2: Link Layer, Pages 21-32; Chapter 18: TCP Connection Establishment and Termination, Pages 229-252; Chapter 19: TCP Interactive Data Flow, Pages 263-274; Chapter 20: TCP Bulk Data Flow, Pages 275-292; Chapter 21: TCP Timeout and Retransmission, Pages 297-306), and in further view of Belove et al. (5,491,820) in further view of Baylor et al. (U.S. Patent No. 6,175,899 hereinafter Baylor).

In considering claims 1, 14, and 34, Stevens discloses a method, and computer program product, for transmitting a packet of data from a first computing system to a second computing system, the first computing system and the second computing system being included in a client/server object-based computing system, wherein the first computing system is a server and the second computing system is a client, the method comprising:

computer code for identifying the packet of data using the first computing system (using the sequence number)(see page 230, Fig. 18.1, line 1; page 231, lines 1-4);

computer code for attempting to send the packet of data from the first computing system to the second computing system (see page 230, line 1);

computer code for determining when the packet of data is received by the second computing system (via timeline) (see page 230, line 2; page 231, lines 21-23; page 232, Fig. 18.3);

computer code for sending an acknowledgment from the second computing system to the first computing system when it is determined that the packet of data is received by the second computing system, the acknowledgement being arranged to indicate that the packet of data is received by the second computing system (see page 230, line 2; page 231, lines 10-11; page 232, Fig. 18.3, segment 2); and

a computer readable medium for inherently storing the computer codes.

Although Stevens shows substantial features of the claimed invention, he fails to disclose the packet of data including data which represents an object in the client/server object-based computing system, the object being represented in an object list in the first computing system, the object list arranged to include objects that are to be updated, and the object also being represented in a filter tree which is arranged to identify objects that the second computing system has an interest in. However, Belove et al., whose invention is a method for utilizing an object-based approach to storage and transmission of retrievable items over a TCP/IP network, discloses such a packet of data including data which represents an object in the client/server object-based computing system, the object being represented in an object list in the first computing system,

the object list arranged to include objects that are to be updated, and the object also being represented in a filter tree which is arranged to identify objects that the second computing system has an interest in (see col. 6, lines 8-17 and lines 21-33). Therefore, given the teachings of Belove et al., it would have been obvious for a person having ordinary skills in the art to modify Stevens by including data which represents an object in the client/server object-based computing system in order to facilitate the transmission and processing of such data over a TCP/IP network.

Although the Stevens claim the invention substantially as claimed, Stevens does not disclose wherein the second computing system is listening. Nonetheless, listening or snooping for updates is well known in the art as evidenced by. In similar art, Baylor teaches that cache locations learn of an update by monitoring or snooping (col. 2, lines 41-44). Given the teaching of Baylor a person having ordinary skill in the art would readily recognized the advantages of modifying the system as disclosed by Stevens to include the step of listening or snooping in order for the second computing system to obtain in a timely manner updates as they occur to objects in which it has interest in receiving updates. Therefore, the aforementioned limitation would have been an obvious modification to the system as disclosed by Stevens.

In considering claims 2 and 15, Stevens discloses a method and computer program product further including re-attempting to send the packet of data from the first computing system to the second computing system when it is determined that the packet of data is not received by the second computing system (see page 298, Fig. 21.1, segments 6-18; page 299, lines 4-5, lines 14-16).

In considering claims 3 and 16, Stevens discloses a method and computer program product wherein re-attempting to send the packet of data does not include attempting to establish

communications between the first computing system and the second computing system (see page 298, Fig. 21.1, segments 6-18; page 299, lines 4-5, lines 14-16).

In considering claims 4 and 17, Stevens discloses a method and computer program product further including determining when the reattempt to send the packet of data is successful, wherein when it is determined that the re-attempt to send the packet of data is not successful, an attempt is made to establish communications between the first computing system and the second computing system (via RST – reset) (see page 298, Fig. 21.1, segment 19; page 246, lines 29-33) (note: communications can be inherently re-established via SYN).

In considering claim 6, Stevens discloses a method wherein attempting to send the packet of data from the first computing system to the second computing system includes:

> placing the packet of data in a queue using the first computing system, the queue being arranged to prioritize the packet of data with respect to any packets of data associated with the queue (see page 276, Fig. 20.1, segments 4, 5, 6, 9, 11, 12, 13, 15); and
>
> removing the packet of data from the queue using the second computing system (see page 277, lines 4-15) (note: the buffer is inherently made up of queues).

In considering claim 7, Stevens discloses a method wherein the first computing system is a client and the second computing system is a server (see page 231, lines 28-33).

In considering claim 8, Stevens discloses a method wherein the first computing system is a server and the second computing system is a client (see page 250, Fig. 18.7; page 251, lines 1-3).

In considering claims 9 and 18, Stevens discloses a method, and computer program product, for transmitting a packet of data from a first computing system to a second computing system, the first computing system and the second computing system being included in a client/server object-based computing system, wherein the first computing system is a server and the second computing system is a client, the method comprising:

computer code for attempting to send the packet of data from the first computing system to the second computing system (see page 230, line 1);

computer code for determining when the packet of data is received by the second computing system (see page 230, line 2; page 231, lines 21-23; page 232, Fig. 18.3);

computer code for identifying the packet of data as being successfully sent when it is determined that the packet of data is received by the second computing system (via ACK) (see page 230, line 2; page 231, lines 10-11; page 232, Fig. 18.3, segment 2);

computer code for assuming that packet losses have occurred when it is determined that the packet of data is not received by the second computing system, wherein assuming that packet losses have occurred includes repeating a) and b) for up to a predetermined number of times (3 times – and/or exponential back-off) (see page 308, Fig. 21.7, segments 54, 58, 60, 61, 62; page 309; lines 9-18; page 299, lines 4-13; page 298, Fig. 21.1); and

a computer readable medium that inherently stores the computer codes.

Additionally, Belove et al. discloses a packet of data including data which represents an object in the client/server object-based computing system, the object being represented in an

object list in the first computing system, the object list arranged to include objects that are to be updated (see col. 6, lines 8-17 and lines 21-33).

Although the Stevens claim the invention substantially as claimed, Stevens does not disclose wherein the second computing system is listening. Nonetheless, listening or snooping for updates is well known in the art as evidenced by. In similar art, Baylor teaches that cache locations learn of an update by monitoring or snooping (col. 2, lines 41-44). Given the teaching of Baylor a person having ordinary skill in the art would readily recognized the advantages of modifying the system as disclosed by Stevens to include the step of listening or snooping in order for the second computing system to obtain in a timely manner updates as they occur to objects in which it has interest in receiving updates. Therefore, the aforementioned limitation would have been an obvious modification to the system as disclosed by Stevens.

In considering claims 10 and 19, Stevens discloses a method and computer program product wherein computer code for assuming that packet losses have occurred includes computer code for re-attempting to send the packet of data from the first computing system to the second computing system and computer code for determining when the re-attempt to send the packet of data is successful (see page 308, Fig. 21.7, segments 63, 64, 65, 66, 68, 70).

In considering claim 11, Stevens discloses a method wherein a time differential between each attempt at repeating a) and b) is determined using statistical information including at least one measurement of an amount of time elapsed for another packet of data to be sent and received (RTT – round trip time) (see page 299, lines 20-30).

In considering claim 12, Stevens discloses a method wherein when attempting to send the packet of data from the first computing system to the second computing system, and determining

when the packet of data is received by the second computing system have been repeated a predetermined number of times, at least one attempt is made to establish a connection between the first computing system and the second computing system (see page 298, Fig. 21.1, segment 19).

In considering claim 13, Stevens discloses a method further including determining when the at least one attempt to establish the connection between the first computing system and the second computing system is successful, wherein when it is determined that the at least one attempt to establish the connection is successful, attempting to send the packet of data from the first computing system to the second computing system, and determining when the packet of data is received by the second computing system are repeated (see page 298, Fig. 21.1, timeline).

In considering claim 20, Stevens discloses a computer program product further including computer code for initiating at least one attempt establish a connection between the first computing system and the second computing system when it is determined that the reattempt to send the packet of data is unsuccessful (see page 298, Fig. 21.1, segment 19).

In considering claim 21, Stevens discloses a client/server object-based computing system, the client/server object-based computing system, wherein the first computing system is a server and the second computing system is a client, comprising:

at least one server (see page 237, Fig. 18.8);

at least one client, the at least one client being at least periodically in communication with the server across a low-bandwidth communications channel (SLIP) (see page 25, lines 11-16; page 237, Fig. 18.8);

a mechanism (RTT Measurement) arranged to reduce statistical information associated with the client/server object-based computing system, the mechanism including a measuring system for measuring time elapsed for a packet of data to be sent between the at least one server and the at least one client (see page 300, lines 1-36);

a data transmission system, the data transmission system being arranged to transmit data between the at least one client and the at least one server, the data transmission system further being arranged to repeatedly attempt to transmit the data for up to a number of times determined by the mechanism (see page 308, Fig. 21.7, segments 54, 58, 60, 61, 62; page 309; lines 9-18; page 299, lines 4-13; page 298, Fig. 21.1); and

a reconnection system, the reconnection system being arranged to attempt to reinstate the low-bandwidth communications channel after the transmission system repeatedly attempts to transmit the data for up to the number of times determined by the mechanism (see page 298, Fig. 21.1, segment 19).

Additionally,

Belove et al. discloses a packet of data including data which represents an object in the client/server object-based computing system, the object being represented in an object list in the first computing system, the object list arranged to include objects that are to be updated (see col. 6, lines 8-17 and lines 21-33).

Although the Stevens claim the invention substantially as claimed, Stevens does not disclose wherein the second computing system is listening. Nonetheless, listening or snooping for updates is well known in the art as evidenced by. In similar art, Baylor teaches that cache locations learn of an update by monitoring or snooping (col. 2, lines 41-44). Given the teaching

of Baylor a person having ordinary skill in the art would readily recognized the advantages of modifying the system as disclosed by Stevens to include the step of listening or snooping in order for the second computing system to obtain in a timely manner updates as they occur to objects in which it has interest in receiving updates. Therefore, the aforementioned limitation would have been an obvious modification to the system as disclosed by Stevens.

In considering claim 25, Stevens discloses a method for substantially optimizing the transmission of data between a first computing system to a second computing system, the first computing system and the second computing system being included in a client/server object-based computing system, wherein the first computing system is a server and the second computing system is a client, the data including a first packet, the method comprising:

a) gathering statistical information associated with the client/server object-based computing system, wherein gathering the statistical information includes measuring time used to send at least a second packet of data between the first computing system and the second computing system (see page 302; Fig. 21.2, RTT #2);

b) attempting to send the first packet from the first computing system to the second computing system (see page 230, line 1);

c) determining when the first packet is received by the second computing system (see page 230, line 2; page 231, lines 21-23; page 232, Fig. 18.3);

d) determining an amount of time to elapse before attempting to re-send the first packet when it is determined that the first packet is not received by the second computing system, the amount of time being determined using the measured time used to send the at

least second packet (via exponential back-off) (see page 309; lines 9-18; page 299, lines 4-13; page 298, Fig. 21.1); and

e) attempting to re-send the first packet after the amount of time elapses (see page 309; lines 9-18; page 299, lines 4-13; page 298, Fig. 21.1).

Additionally,

Belove et al. discloses a packet of data including data which represents an object in the client/server object-based computing system, the object being represented in an object list in the first computing system, the object list arranged to include objects that are to be updated (see col. 6, lines 8-17 and lines 21-33).

Although the Stevens claim the invention substantially as claimed, Stevens does not disclose wherein the second computing system is listening. Nonetheless, listening or snooping for updates is well known in the art as evidenced by. In similar art, Baylor teaches that cache locations learn of an update by monitoring or snooping (col. 2, lines 41-44). Given the teaching of Baylor a person having ordinary skill in the art would readily recognized the advantages of modifying the system as disclosed by Stevens to include the step of listening or snooping in order for the second computing system to obtain in a timely manner updates as they occur to objects in which it has interest in receiving updates. Therefore, the aforementioned limitation would have been an obvious modification to the system as disclosed by Stevens.

In considering claim 26, Stevens discloses a method further including:

determining a number of times attempts are made to re-send the first packet, wherein the number of times is determined using the statistical information; and repeating

determining when the first packet is received by the second computing system and attempting to re-send the first packet after the amount of time elapses for up to the number of times (3 times) (see page 308, Fig. 21.7, segments 54, 58, 60, 61, 62; page 309; lines 9-18).

In considering claim 27, Stevens discloses a method further including repeating the determination of an amount of time to elapse before attempting to re-send the first packet when it is determined that the first packet is not received by the second computing system, the amount of time being determined using the measured time used to send the at least second packet for up to the number of times (via exponential back-off) (see page 309; lines 9-18; page 299, lines 4-13; page 298, Fig. 21.1).

In considering claim 28, Stevens discloses a method wherein determining when the first packet is received by the second computing system and attempting to re-send the first packet after the amount of time elapses are inherently repeated until it is determined that the first packet is received by the second computing system (via ACK).

In considering claim 29, Stevens discloses a method further including inherently attempting to establish a communications channel between the first computing system and the second computing system after repeating determining when the first packet is received by the second computing system and attempting to re-send the first packet after the amount of time elapses for the number of times.

3. Claims 5, 22, 23, 24, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens and Belove et al. as applied to claims 1, 21, and 26 above, and further in view of Rich et al. (6,457,065).

In considering claims 5 and 30, Stevens discloses a method further including establishing a connection between the first computing system and the second computing system before identifying the packet of data (via SYN) (see page 230, Fig 18.1, segment 1; page 231, lines 1-4) [note: although the connection establishment and packet identification are being done together in the cited example, all other packets being sent are inherently identified after the connection has been established via the three-way handshake).

Although Stevens and Belove et al. show substantial features of the claimed invention, they fail to specifically disclose the connection being a wireless connection. However, Rich et al., whose invention is a method for improving the performance of distributed object systems, discloses such a wireless connection (see col. 6, lines 30-40). Therefore, given the teachings of Rich et al., it would have been obvious for a person having ordinary skills in the art to modify Stevens and Belove et al. by establishing a wireless connection in order to provide communications among portable devices.

In considering claim 22, Rich et al. discloses a system wherein the low-bandwidth communications channel is an RF link (see col. 6, lines 30-35).

In considering claim 23, Stevens discloses a system wherein the data transmission system is further arranged to optimize the time elapsed between repeated attempts to transmit the data using the statistical information reduced by the mechanism (see page 300, lines 1-36).

In considering claim 24, Stevens discloses a system wherein the data transmission system and the mechanism are arranged to cooperate to substantially optimize communications bandwidth associated with the client/server object-based computing system (via Delayed ACKs and the Nagle Algorithm) (see page 265, lines 10-19; page 266, page 267).

In considering claim 31, Rich et al. discloses a method wherein the wireless communications channel is an RF link (see col. 6, lines 30-35).

4. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens and Belove et al. as applied to claim 25 above, and further in view of Mangold et al. (5,926,232).

In considering claim 32, Although Stevens and Belove et al. show substantial features of the claimed invention, they fail to disclose a method wherein gathering the statistical information further includes measuring long-term and short-term packet loss rates. However, Mangold et al., whose invention is a method for optimizing the transmission of signals, discloses such a method wherein gathering the statistical information further includes measuring long-term and short-term packet loss rates (residual error rate) (see col. 2, lines 14-24, lines 35-40. Therefore, given the teachings of Mangold et al., it would have been obvious for a person having ordinary skills in the art to modify Stevens and Belove et al. by includes measuring long-term and short-term packet loss rates within the gathering of the statistical information in order to determine the overall pattern characteristics (e.g. burstiness) of the packet loss rates.

In considering claim 33, Official notice is taken regarding the measuring of long-term and short-term packet loss rates includes assuming that packet loss is due to one selected from the group consisting of congestion in the client/server object-based computing system, interference in the client/server object-based computing system, and obstruction in the client/server object-based computing system. It would have been obvious for one of ordinary skill in the art at the time of the invention to assume that packet losses can result from congestion, interference, and obstruction. Common conditions such as full buffers/queues (congestion), mixed wireless signals (interference), and limited line-of-sight (obstruction) all

lead to packet losses. Although Stevens, Belove et al., and Mangold et al. never specify interference and congestion being possible causes of packet loss, they are an obvious modification to the methods and systems disclosed by Stevens and Mangold et al.

Response to Arguments

5. Applicant's arguments with respect to claims 1-6 and 9-34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly D Flynn whose telephone number is 703-308-7609. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 703-305-4792. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Kimberly D Flynn
Examiner
Art Unit 2153

KF
December 15, 2003

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